

Barn Owl (*Tyto alba*) Species Guidance

Family: Tytonidae – the barn owls

State Status: [SC/M \(Special Concern/Migratory Bird Protection\)](#)
(De-listed from Endangered, 2014)

State Rank: [SNA](#)

Federal Status: [None](#)

Global Rank: [G5](#)

Wildlife Action Plan Mean Risk Score: [3.1](#)

Wildlife Action Plan Area of Importance Score: [1](#)



Counties with documented locations of Barn Owl breeding or breeding evidence in Wisconsin.
Source: Natural Heritage Inventory Database, March 2012.



Photo by C.F. Zeillemaker

Species Information

General Description: The Barn Owl is a medium-sized owl (32-40 cm [12-16 in]) with a heart-shaped facial disc and no ear tufts. It has dark eyes, broad, rounded wings, and long, feathered legs with very long and sharp talons. The head and upperparts are mottled silvery gray and orange-buff. The facial disc, underwings, and underparts are whitish, the latter sometimes with fine dark spotting. This species has a buoyant, moth-like flight and is most active in the evening or at night. Sexes are similar, but females are larger, heavier, and more speckled than males, and also have darker faces and larger spots on the breast and belly.

The common call is a harsh hissing screech or scream, often described as “shrrreeeee” (Mikkola 1983, Howell and Webb 1995, Konig et al. 1999, Sibley 2000). An example of a typical call can be heard here: http://www.allaboutbirds.org/guide/barn_owl/sounds

Definitive Identification: The breast and belly color ranges from white to buff and is sparsely to heavily speckled with small black spots, and these features make this species perhaps the most distinctive-looking owl. The Barn Owl is easily distinguished from other owl species by its heart-shaped facial disc ranging in color from white to buff, dark eyes, white underparts, and lack of ear tufts (Mikkola 1983, Johnsgard 1988).

Similar Species: The Short-eared Owl (*Asio flammeus*) is the most similar owl, but has yellow to orange eyes, short ear tufts, and heavily streaked upper breast. The downy young of Great Horned Owls (*Bubo virginianus*) have been mistaken for Barn Owls, but young Great Horned Owls are largely whitish and lack evident ear tufts (Marti et al. 2005).

Associated Species: Within open and partly open landscapes (dry-mesic and mesic prairie, surrogate grassland) in Wisconsin, and to some degree around human habitation, Barn Owls may occur with the following Species of Greatest Conservation Need: Blue-winged Teal (*Anas discors*), Short-eared Owl (*Asio flammeus*), Northern Harrier (*Circus cyaneus*), Greater Prairie-chicken (*Tympanuchus cupido*), Northern Bobwhite (*Colinus virginianus*), Upland Sandpiper (*Bartramia longicauda*), Willow Flycatcher (*Empidonax traillii*), Bell’s Vireo (*Vireo bellii*), Henslow’s Sparrow (*Ammodramus henslowii*), and Bobolink (*Dolichonyx oryzivorus*).

State Distribution and Abundance: The Barn Owl has never been widespread or abundant in Wisconsin (Matteson and Peterson 1988, Robbins 1991) and has averaged no more than one to five annual documented occurrences since the late nineteenth century (Matteson and Petersen 1988, S. Matteson pers. comm.). Wisconsin lies at the northern limit of the species’ breeding range in North America (Hamerstrom 1972, Karalus and Eckert 1974). This species is considered an accidental summer resident in southern and central Wisconsin, and occurs primarily south of a line from Platteville to Port Washington (Grant to Ozaukee counties) (Robbins 1991). Barn Owls have been found in small numbers

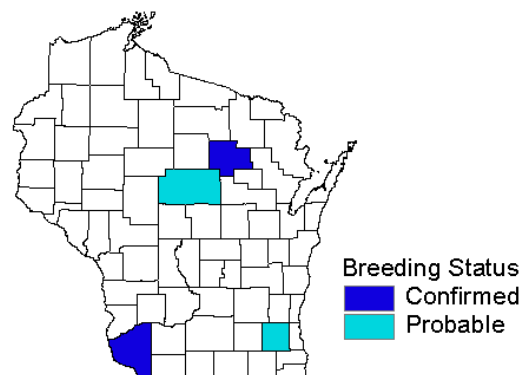
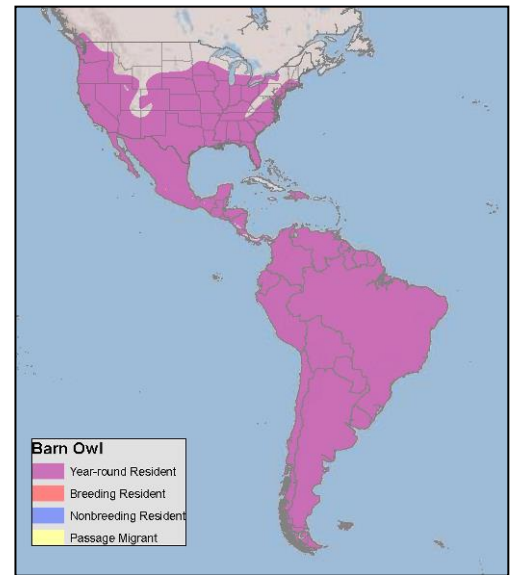


Figure 1: Barn Owl Breeding Locations from Breeding Bird Atlas (Cutright et al. 2006)

north of this line in Pierce, Sawyer, Shawano and Oconto counties, and the recent Breeding Bird Atlas (see Fig. 1) notes confirmed breeding in Langlade County.

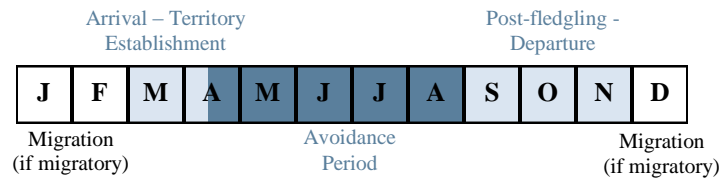
Global Distribution and Abundance: Barn Owls occur throughout most tropical and subtropical regions – including all of Central and South America – and extend into temperate regions in North America and Europe. Barn Owls’ northernmost populations occur in Scotland. In North America, this species occurs from southwestern British Columbia, western Washington, Oregon, northern Utah, southern Wyoming, Nebraska, Iowa, southern Wisconsin, southern Michigan, southern Ontario, New York, southern Vermont, and Massachusetts south through the southern United States. Barn Owls are considered rare and local in many states at the northern edge of the species’ range, where populations are partially migratory (Mikkola 1983, Johnsgard 1988, Marti et al. 2005).

Diet: Barn Owls are typically nocturnal and prefer to eat small mammals when available; they particularly favor voles, shrews, mice, and lemmings, but they may also eat bats and rabbits (Marti et al. 2005). Barn Owls occasionally eat birds such as starlings, blackbirds, sparrows, and meadowlarks, especially when small mammals are scarce (Marti et al. 2005).



New World range map for the Barn Owl. (NatureServe 2013)

Reproductive Cycle: Barn Owls likely arrive in Wisconsin between mid-March and late April, but their arrival dates are not well documented (Robbins 1991). In Wisconsin, dates for nests with eggs range from April 20 to August 20 (Robbins 1991). The avoidance period for nesting Barn Owls in Wisconsin is April 16-August 31. Most individuals depart Wisconsin in October and November, but occasionally a few stay throughout the winter (Robbins 1991).



Ecology: Barn Owls are cavity-nesting birds that use both natural and human-created cavities. Barn Owl nest sites in Wisconsin include concrete-domed silos, barns, tree cavities, abandoned farm buildings, church steeples, and possibly holes in banks or cliffs (Matteson and Petersen 1988). Barn Owls may also readily use nest boxes (Marti 1997, Radley and Bednarz 2005).

Barn Owls are usually monogamous and mate for life. Where Barn Owls are common, they frequently reuse nest sites from year to year and may use nest sites as roosting habitat outside of the breeding season. For example, in Utah only 19 of approximately 500 banded Barn Owls dispersed from one breeding site to another (Marti 1999). No nest is built; instead females prepare a lining for eggs from their own regurgitated pellets (consisting of fur and feathers from prey), shredding them with her feet to form a cup. Females typically lay 4-7 eggs with numbers ranging from 2-13 (Mikkola 1983, Marti et al. 2005). The female begins incubation with the first egg and is fed by the male throughout the incubation period. Young take their first flight after approximately eight weeks and are independent approximately three weeks later (Mikkola 1983, Marti et al. 2005). Barn Owls exhibit a Complex Basic Strategy for molt (Howell et al. 2003), including complete preformative, partial prebasic, and no prealternate molts.

Home range size varies depending on prey density, and estimates vary from approximately 700 acres to 1,700 acres (Marti et al. 2005). Only the immediate vicinity of the nest, however, is actively defended (Johnsgard 1988).

Barn Owls typically forage at night or dusk, with a relatively slow, low, quartering flight that includes frequent hovering intervals (Honer 1963, Burton 1973, Karalus and Eckert 1974, Marti 1974, 1989, Rudolph 1978, Bunn et al. 1982, Mikkola 1983, Rosenberg 1986). Excellent hearing, aided by the owls’ heart-shaped facial disk, allows them to locate prey in the grass, often in total darkness. Barn Owls swallow their prey whole but are unable to digest the fur, feathers or bones. They cough up or regurgitate the undigested parts as a dark odorless lump called a pellet. Examination of these pellets can identify prey items. Some individuals also hunt from a perch, especially along field edges (Byrd 1982, Rosenberg 1986). Vole density is associated with habitat quality for Barn Owls, and increases in irruptive rodent populations due to warmer temperatures may benefit the species. One year of poor meadow vole abundance can result in a rapid population decline whereas one year of substantial meadow vole abundance can result in rapid Barn Owl population recovery (B. Colvin pers. comm. in Schneider and Pence 1992).



Barn Owl habitats like this Fond du Lac County site (left) typically exhibit topographical relief and have wetlands and waterways nearby, and large landscape-scale patches of grassland habitat in southwest Wisconsin (right) are becoming rare, but are necessary to support area-sensitive grassland birds. R. Staffen, Wisconsin DNR

Natural Community Associations ([WDNR 2005](#), [WDNR 2009](#)):

Significant: [dry-mesic prairie](#), [mesic prairie](#), [surrogate grasslands](#)

Moderate: dry prairie, oak opening, southern sedge meadow, wet prairie, wet-mesic prairie

Minimal: none

Habitat: Barn Owls inhabit open rural lands or grasslands exhibiting topographical relief with some combination of wet meadow, wetland edge, pasture, oldfield, grain crop, hayfield, hedges, and fencerows, usually within a half to one mile of permanent water and adjacent to woodlot edge (Matteson and Petersen 1988). This species is not found in densely forested regions (Marti et al. 2005). The quantity and quality of dense grass habitats appear to be important correlates with Barn Owl nest activity. Grassland and wetland habitats typically support healthy rodent populations, especially voles (*Microtus* spp.), and they are therefore favored Barn Owl foraging areas (Colvin 1985). Barn Owls are considered area-sensitive, and typically require grassland landscapes greater than 250 acres (Sample and Mossman 1997). However, due to their association with rural landscapes (including farms and towns) they may occupy “quilted” landscapes that offer an interspersed of suitable foraging habitat (fallow field, wet meadow, pasture, field edge) and potential nest sites, which may be a town oak or silver maple, as well as a silo or outbuilding. Grassland landscapes larger than 250 acres are rare in Wisconsin due to fragmentation and loss of pasture and fallow fields to row crops, and conservation efforts should focus on the [southwest savanna](#) and [southeast glacial plains](#) ecological landscapes where larger patches of grassland habitat remain.

Threats: The intensification of agriculture, particularly the shift from hay crops and pastures to row crops, has likely reduced foraging opportunities for this species (Colvin 1985, Matteson and Peterson 1988). The change in farming methods towards eliminating hedgerows/fencerows and replacing older, concrete silos with modern silos and outbuildings in agricultural landscapes may be negatively impacting this species (WDNR 2005). Draining or flooding wet meadows and succession of grasslands to forest have resulted in greater grassland bird declines across the Midwest than any other habitat guild of birds (Herkert 1995, Robbins et al. 1996, Sauer et al. 2003). Fragmentation of grassland habitat by small forest patches increases the likelihood of Great-horned Owls inhibiting Barn Owls for nesting habitats or prey on juveniles and adults (Rudolph 1978). The lack of available nest sites within grassland habitats may be a limiting factor in Wisconsin (Matteson and Peterson 1988). Severe winter weather may also preclude Barn Owl population growth in the state (Matteson and Peterson 1988), which is at the northern edge of its North American range. Secondary poisoning from rodenticides, which are widely used in agricultural areas, has been considered a potential hazard because of the importance of rodents in the diet (Mendenhall and Pank 1980, Newton et al., 2002).

Climate Change Impacts: Barn Owls in Wisconsin are not considered sensitive to effects of climate change, and no climate change adaptation activity is recommended for this species (LeDee & Ribic in press). Changes in land use, including loss of grassland and wetland habitats coupled with changes in agricultural practices (increase of monocultures, loss of hedgerows and modernization of silos), may constrain the suite of climate change adaptation strategies available to landscape-scale grassland managers (WICCI 2011). This edge-of-range species is likely to remain rare, but climate change may result in increasing Barn Owl numbers over the long term if habitat conditions (influenced by prolonged summers and milder winters) become favorable and encourage a wider state distribution (S. Matteson pers. comm.).

Survey Guidelines: If surveys are being conducted for regulatory purposes, survey protocols and surveyor qualifications must first be approved by the Endangered Resources Review Program (see *Contact Information*). Conduct area searches during the breeding season: April 16 to August 31. Carry out three surveys before initiating any project activities, preferably 10 days apart, including at least one survey less than one week prior to proposed project activity that may impact Barn Owls (see *Screening Procedures*).

Conduct visual and aural surveys from one hour before sunset to two hours after or from two hours before sunrise to one hour after. Perform surveys during appropriate weather (i.e., no fog, rain, or wind > 10 mph; Ralph et al. 1993). Barn Owls may be located by listening for their loud hissing scream, listening for the food-begging calls of young, watching for foraging adult flights, and searching for pellets and whitewash on structures and tree trunks near their nests or roost areas. Food begging calls of nestling Barn Owls can be heard up to one-quarter of a mile from the nest and may serve as the best means of detecting and locating active territories (S. Matteson pers. comm.) Some barn owls may respond to broadcast calls but they do not do so consistently enough for this approach to solely be used for survey purposes (Hardey et al. 2006). Little additional information is available in the United States as to whether broadcast calls of Barn Owl sounds would enhance detections (Walk et al. 2010).

Survey the entire affected area that contains suitable nesting habitat for Barn Owls, as well as a 500 ft buffer on either side of the project zone. Walk slowly throughout the area, stopping to inspect all tree cavities (especially silver maple) or man-made structures that could harbor a nest (e.g., barns, silos, other farm buildings), and record the following data: all Barn Owls seen or heard, evidence of Barn Owl roosting (pellets), numbers of pairs and juveniles, and behavioral observations such as courtship displays or food carries. Whenever possible, also map the approximate territory boundaries.

Summarize results, including survey dates, times, weather conditions, number of detections, detection locations, and behavioral data and submit via the WDNR online report: <<http://dnr.wi.gov>, keyword “rare animal field report form”>.

Management Guidelines

The following guidelines typically describe actions that will help maintain or enhance habitat for the species. These actions are not mandatory unless required by a permit, authorization or approval.

Barn Owls are most often associated with open grassland and agricultural landscapes in Wisconsin and nest in tree cavities, barns, silos, grain bins, and abandoned buildings. They typically forage in open or shrubby grasslands, marshes, and agricultural areas near water. Focusing grassland management efforts on a larger suite of grassland birds of high importance in Wisconsin could serve as an umbrella to benefit species like Barn Owl considered a rare or accidental breeder in Wisconsin.

Expanding grassland habitat and creating additional sites dedicated to conserving grassland wildlife would benefit Barn Owls and other Species of Greatest Conservation Need (Walk et al. 2010). Prioritize efforts to preserve existing grasslands and acquire additional land, such as cropland, which can then be converted to grassland. Create large areas of open grassland habitat or maintain multiple large grasslands within a region to ensure adequate food resources and account for cyclic small mammal populations. A low concentration of suitable foraging habitat is likely the limiting factor causing low abundance of Barn Owls in Illinois and the Midwest (Walk et al. 2010). Grassland management to encourage or retain dense ground cover, thatch, and litter to help maintain high small mammal populations, particularly of voles (an important food source) would benefit Barn Owls. If mowing does occur, it should follow the Incidental Take Protocol WDNR Grassland and Savanna Protocol for [Henslow's Sparrow](#), which benefits many SGCN grassland birds. Marti et al. (2005) includes U.S. Department of Agriculture conservation programs, such as the Conservation Reserve Program, among the agricultural practices that have benefitted Barn Owls and other grassland species.

Protect known Barn Owl nest sites in barns, silos, and natural tree cavities from disturbance during the nesting season. Nests should not be disturbed during incubation or near fledgling time to avoid nest abandonment and premature fledging (Colvin 1984, Grier and Fyfe 1987). Providing nest boxes near high-quality foraging habitat where no known natural nests are present would also be an important management strategy (Matteson and Petersen 1988).

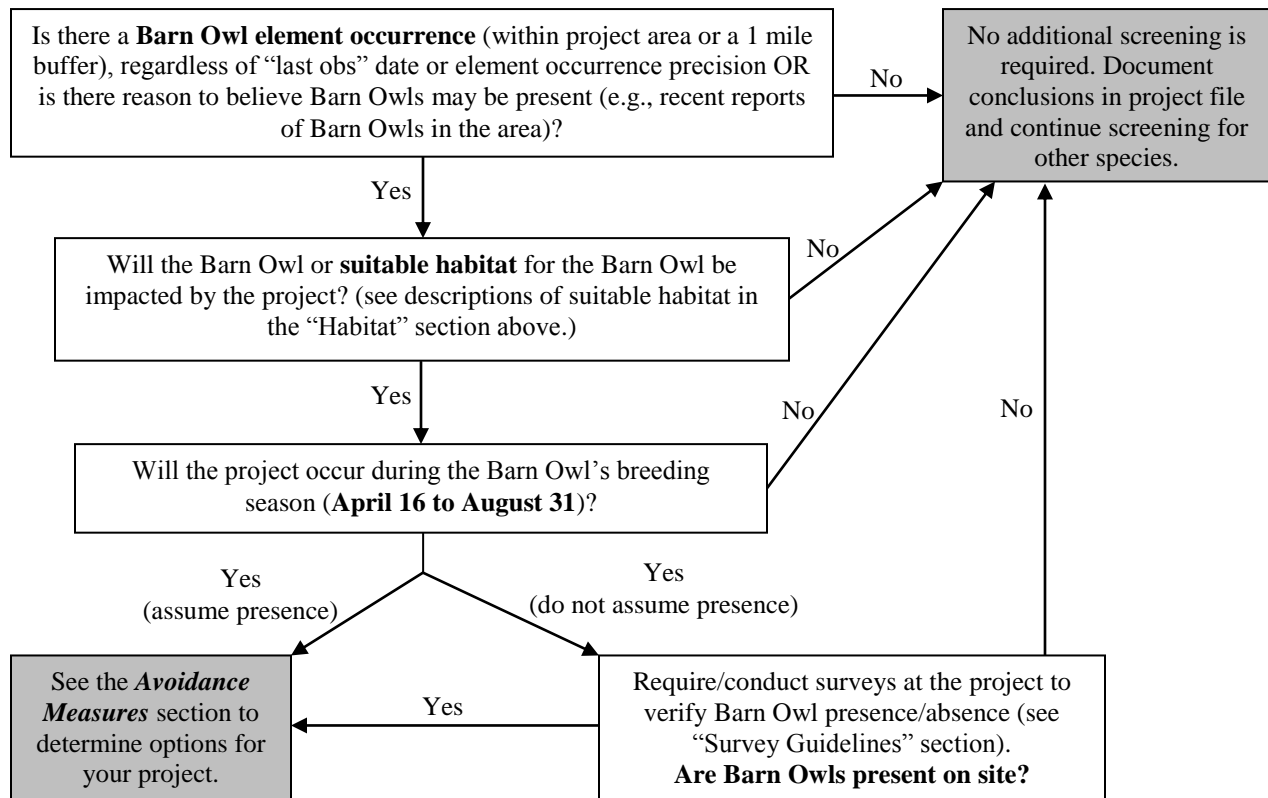
Wisconsin initiated a Barn Owl captive breeding program in the spring of 1980 to “reestablish a breeding population of Barn Owls based on captive-reared stock in southeast Wisconsin.” From 1982-1987, 86 captive-bred Barn Owl young were released or escaped in southeastern Wisconsin. The Endangered Resources program (now the Natural Heritage Conservation program) decided in 1987 to discontinue the captive-breeding program because there was no evidence that it had enhanced the state’s Barn Owl population (Matteson and Petersen 1988). Captive release programs in other midwestern states have produced similar results (Schneider and Pence 1992).

Conservation and management strategies for this species should be focused in the following Wisconsin ecological landscapes: [central sand plains](#), [southeast glacial plains](#), [southwest savanna](#), [western coulee and ridges](#), and [western prairie](#) (WDNR 2005).

Screening Procedures

The following procedures should be followed by DNR staff reviewing proposed projects for potential impacts to the species.

Follow the “Conducting Endangered Resources Reviews: A Step-by-Step Guide for Wisconsin DNR Staff” document (summarized below) to determine if Barn Owl will be impacted by a project (WDNR 2012):



Avoidance Measures

The following measures are specific actions required by DNR to avoid take (mortality) of state threatened or endangered species per Wisconsin’s Endangered Species law (s. 29.604, Wis. Stats.) These guidelines are typically not mandatory for non-listed species (e.g., special concern species) unless required by a permit, authorization or approval.

Barn Owls are protected by the Federal Migratory Bird Treaty Act of 1918, which established a prohibition, unless permitted by regulations, to "pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention . . . for the protection of migratory birds . . . or any part, nest, or egg of any such bird." (16 U.S.C. 703). Contact the US Fish and Wildlife Service directly for any permits related to the Federal Migratory Bird Treaty Act (see *Contact Information*).

If you have not yet read through *Screening Procedures*, please review them first to determine if avoidance measures are necessary for the project.

1. The simplest and preferred method to avoid take of Barn Owls is to avoid directly impacting individuals, known Barn Owl locations, or areas of suitable habitat (described above in the “Habitat” section and in *Screening Procedures*).
2. If Barn Owl impacts cannot be avoided entirely, avoid disturbance to known nest sites during the **breeding season (April 16 to August 31)**.
3. When take cannot be avoided, we recommend referring to the *Management Guidelines* above for practices that can minimize impacts or even enhance habitat and improve this species’ ability to persist over the long-term.

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Linked Websites:

- Cornell Lab of Ornithology All About the Birds: <http://www.allaboutbirds.org/guide/Barn_Owl/id>
- Managing Habitat for Grassland Birds: <<http://www.npwrc.usgs.gov/resource/birds/wiscbird/index.htm>>
- Natureserve Explorer: <<http://www.natureserve.org/explorer/index.htm>>
- Natural Communities of Wisconsin: <<http://dnr.wi.gov>, key word “natural communities”>
- Rare Animal Field Report Form: <<http://dnr.wi.gov>, key word “rare animal field report form”>
- The Owl Pages: <<http://www.owlpages.com/owls.php?genus=Tyto&species=alba>>
- Wisconsin Bird Conservation Initiative All Bird Conservation Plan: <<http://www.wisconsinbirds.org/plan/species/bnow.htm>>
- Wisconsin Breeding Bird Atlas: <<http://www.uwgb.edu/birds/wbba/>>
- Wisconsin Wildlife Action Plan: <<http://dnr.wi.gov>, key word “Wildlife Action Plan”>
- Wisconsin Initiative on Climate Change Impacts: <<http://www.wicci.wisc.edu/>>
- Wisconsin Endangered and Threatened Species: <<http://dnr.wi.gov>, key word “endangered resources”>
- Wisconsin Endangered and Threatened Species Permit: <<http://dnr.iw.gov>, key word “endangered species permit”>
- Wisconsin Natural Heritage Inventory Working List Key: <<http://dnr.wi.gov>, key word “Natural Heritage Working List”>

Funding

- Natural Resources Foundation of Wisconsin: <<http://www.wisconservation.org/>>
- USFWS State Wildlife Grants Program: <<http://wsfrprograms.fws.gov/subpages/grantprograms/swg/swg.htm>>
- Wisconsin Natural Heritage Conservation Fund
- Wisconsin DNR Division of Forestry

Contact Information (Wisconsin DNR Species Experts for Barn Owl)

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